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TRANSMITTAL LETTER FOR REVISED APPEAL BRIEF

In re patent application of:) MMB Docket No.: **1007-0564**
))
Inventors: **Astrauskas et al.**) Emerson Docket No.: **M-7371**
))
Serial No.: **10/628,700**) Group Art Unit: **2838**
))
Filed: **July 28, 2003**) Examiner: **Edward H. Tso**
))
Title: **Method and Apparatus for**) Confirmation No.: **6235**
Conserving Battery for Operation)
of a Low Intensity Optical)
Communication Probe)

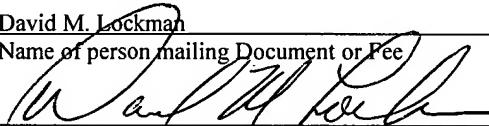
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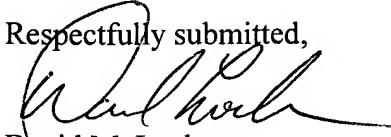
LETTER

Sir:

Enclosed is a Revised Appeal Brief in connection with the above-identified patent application. One copy of the brief was filed on August 14, 2006. A Notice of Non-Compliant Brief was received on September 8, 2006. It is believed that no fee is owed because it was paid with the filing of the original Appeal Brief.

Additionally, please provide any extension of time which may be necessary and charge any fees which may be due to Account No. 13-0014, but not to include any payment of issue fees.

Respectfully submitted,



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September 21, 2006
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re patent application of:) MMB Docket No.: 1007-0564
Inventors: **Astrauskas et al.**) Emerson Docket No.: M-7371
Serial No.: **10/628,700**) Group Art Unit: 2838
Filed: **July 28, 2003**) Examiner: **Edward H. Tso**
Title: **Method and Apparatus for**)
 Conserving Battery for Operation)
 of a Low Intensity Optical)
 Communication Probe)

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September 21, 2006

Date of Signature

REVISED BRIEF ON APPEAL

Hon. Commissioner of Patents and Trademarks
Alexandria, VA 20231

Sir:

This is an appeal under 37 CFR § 41.31 to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office from the final rejection of the claims 1-6, and 8-20 of the above-identified patent application. These claims were

finally rejected in an Office Action dated March 15, 2006. One copy of the brief was filed on August 14, 2006. A Notice of Non-Compliant Brief was received on September 8, 2006. This brief comports with the exacting form required by the Notice and replaces the previously filed brief. Also, please provide any extension of time that may be necessary and charge any fees that may be due to Account No. 13-0014, but do not include any payment of issue fees.

(1) REAL PARTY IN INTEREST

Emerson Electric Co. of St. Louis, Missouri is the assignee of this patent application, and the real party in interest.

(2) RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this patent application (serial no. 10/628,700).

(3) STATUS OF CLAIMS

Claims 1-6, and 8-20 are pending in the application and were finally rejected in the Office Action mailed March 15, 2006. Claim 7 has been canceled. All of the pending claims 1-6, and 8-20 are being appealed. Each of the appealed claims 1-6, and 8-20 is shown in the Appendix attached to this Appeal Brief.

(4) STATUS OF AMENDMENTS

Appellant has filed no amendments subsequent to the Final Office Action mailed March 15, 2006.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a battery pack for powering a communication probe that is used for optical communication between an external device and a diagnostic tool. The battery pack is located within a housing and coupled to the diagnostic tool through a cable. The battery pack includes at least one battery and a switch. The switch selectively couples the battery in the battery pack to the communication probe in response to a power status signal from the diagnostic tool. When the power status signal indicates the diagnostic tool is in a sleep mode, the switch disconnects the battery from the communication probe. When the power status signal indicates the diagnostic tool is operating, the switch connects the battery to the communication probe to enable optical communication between an external device proximate the communication probe and the diagnostic tool. (Specification, page 70, lines 1-16; FIG. 20). The positive and negative interconnect of dependent claims 6 and 12 is shown in FIG. 21 and described at page 71, lines 14-20. The watchdog timer of claims 3 and 14-15 is described at page 70, lines 17-22 and page 71, lines 8-12.

Independent claim 8 is directed to a method for conserving power in a battery that powers a communication probe that is used for optical communication between an external device and a diagnostic tool. The method includes reception of a power status

signal that indicates whether a diagnostic tool is in active or sleep mode. A battery is selectively coupled to a communication probe for bi-directional optical communication in response to the power status signal indicating the diagnostic tool is in the active mode (Specification, page 70, lines 10-16, and page 71, lines 8-12).

Independent claim 13 is directed to a diagnostic system for an appliance. The diagnostic system includes a diagnostic tool that generates a power status signal indicating whether the diagnostic tool is in an active or sleep mode (Specification, page 63, lines 1-10, and page 70, lines 10-16). A low intensity optical communication probe for bi-directional optical communication with an external device is also part of the system (Specification, page 63, line 11 to page 64, line 6). A battery for powering the low intensity communication probe and a switch for selectively coupling the battery to the communication probe in response to the power status signal indicating the diagnostic tool is in an active mode are also included (Specification, page 70, lines 1-16).

Independent claim 18 is directed to a method for enabling optical communication between a diagnostic tool and a communication probe. The method includes powering a low intensity optical communication probe with a battery to enable bi-directional optical communication with a device external to the optical communication probe and the selective decoupling of the battery from the optical communication probe in response to a power status signal generated by a diagnostic tool that indicates the diagnostic tool is in a sleep mode (Specification, page 70, lines 17-22).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. First Ground of Rejection

The first ground of rejection to be reviewed on appeal is whether one of ordinary skill in the art would view the terminal having a sleep circuit for reducing current flow through a real time clock and memory circuit of Cargin, Jr. et al. (U.S. Pat. No. 6,023,147) as rendering obvious Applicants' selective coupling of a battery to a communication probe in response to the state of a power status signal as set forth in all of the pending claims.

2. Second Ground of Rejection

The second ground of rejection to be reviewed on appeal is whether one of ordinary skill in the art would consider the battery housing for the communication probe that is external from the diagnostic tool and the coupling of the power status signal from the diagnostic tool to the switch incorporated with the battery in the housing to be obvious in view of the single battery pack located within the terminal of Cargin, Jr. that is used to provide power for the terminal and the radio module. The external battery housing and cable are set forth in claims 1-6.

3. Third Ground of Rejection

The third ground of rejection to be reviewed is whether the generation of the power status signal with a watchdog circuit is obvious in light of the sleep mode circuitry of Cargin, Jr. The generation of the power status signal with a watchdog circuit is set forth in claims 3 and 14-15.

4. Fourth Ground of Rejection

The fourth ground of rejection to be reviewed on appeal is whether one of ordinary skill in the art would consider the positive and negative interconnect of claims 6 and 12 to be obvious in light of the ribbon cable coupling the radio module to the terminal of Cargin, Jr.

(7) ARGUMENT

1. First Ground of Rejection

CLAIMS 8-11, 13, and 16-20

Claim 8 is directed to a method of conserving battery power for a communication probe battery that requires receiving a power status signal from a diagnostic tool and selectively coupling the battery to the probe in response to the power status signal for enabling bi-directional optical communication. Cargin, Jr. teaches that power from the main battery is regulated to the +5 Volt level and then used to operate the electronics of the terminal 10. *Cargin, Jr., col. 16, lines 20-62 and FIG. 3.* When the terminal enters its sleep mode, the current from the battery pack to a real time clock circuit and an inactive memory array is greatly reduced, but the battery pack is not decoupled from the terminal or these circuits. *Cargin, Jr., col. 13, line 54 to col. 14, line 14 and FIG. 6.* Instead of decoupling, the reduction in current is achieved by reducing the base current in the transistor that controls the +5 Volt supply to the RAM memory. Consequently, the battery pack is not decoupled from the RAM, but merely provides less current to the memory. That is, the battery pack of Cargin, Jr. is never selectively coupled to the terminal memory or real time clock in response to a power status signal from the terminal. Claim

8, however, requires selective coupling of the battery to an optical communication probe in response to a power status signal from the diagnostic tool. This means that no current flows to the communication probe unless the switch couples the battery to the probe. Thus, the battery pack of Cargin, Jr. requires substantial modification to provide circuitry that would couple the battery pack to the terminal and even more modification to selectively couple the battery pack to the communication probe in response to a power status signal.

The Examiner has argued that switch 45 causes the battery to connect to probe 35 whenever the sleep mode circuitry is in an active state, *citing Cargin, Jr., col. 13, lines 54-60*. This is a completely erroneous reading of the reference. Probe 34 and 35 are merely metallic strips that are electronically shorted by a metallic plate of battery pack 28 to enable a charging current to reach the battery pack 28. *Cargin, Jr., col. 12, lines 57-65*. If the probes are not shorted then no charging current reaches the battery pack. This structure helps prevent an attempt to charge disposable batteries. Therefore, Cargin, Jr., does not teach selectively coupling of a battery to an optical communication probe through a switch in the battery pack.

In order to address this need for substantial modification, the Examiner suggests, but does not develop, the teachings of the Cargin, Jr. reference regarding the control of power to its communication interface or radio module. These teachings, however, do not arrive at or even suggest the selective coupling of a battery to an optical communication probe in claim 8 as will now be demonstrated. The terminal of Cargin, Jr. includes a data communication interface 96. *Cargin, Jr., FIG. 3*. This communication circuit does not operate unless the CPU 89 detects an external charger being coupled to the terminal. The

current from the charger is used to operate the RS 485 circuit 96. *Cargin, Jr., col. 16, lines 1-19.* Observation of FIG. 3 reveals that the current from the charger is electrically isolated from the battery pack current by diode 80. Therefore, the battery pack 28 is not used to deliver power to the data communication interface 96. Moreover, the charger is not a battery and it does not incorporate a switch that selectively couples the charger to the communication interface 96 in response to a power status signal. For at least these reasons, the battery pack 28 and communication interface 96 do not operate in a manner that renders the method of claim 8 obvious.

The terminal of Cargin, Jr. also includes a RS 232 interface circuit 92. *Cargin, Jr., FIG. 3.* This interface circuit is coupled directly to the CPU 89 and no description indicates the power to this circuit is routed through a switch associated with the battery pack 28. Consequently, battery pack 28 does not render obvious claim 8, which requires selective coupling of a battery that is external to the diagnostic tool to an optical communication probe in response to a power status signal from the diagnostic tool *and* the power status signal being received through a cable coupling the diagnostic tool and the external battery housing. For at least these reasons, the RS 232 interface and the battery pack of Cargin, Jr. do not render the method of claim 8 obvious. The Examiner has failed to provide any evidence that one of ordinary skill in the art would be motivated to modify the battery pack of Cargin, Jr. to monitor a power status signal of the terminal 10 for the purpose of selectively powering the RS 485 or the RS 232 communication interfaces. Indeed, Cargin, Jr. sees no need for such modification and, with respect to the RS 485 circuit, expressly teaches away from powering the circuit with the battery pack.

One final teaching of Cargin, Jr. that requires addressing, although not specifically cited by the Examiner, is the use of a switch to selectively couple power to a radio module in an alternative embodiment. As shown in FIG. 9 and FIG. 12, a control microprocessor is coupled between the main microprocessor and a radio on/off switch. The radio on/off switch selectively couples the battery power to the radio module. The switch is controlled by the control microprocessor. *Cargin, Jr., col. 19, lines 35-42 and col. 24, lines 44-45.* The conditions for operating the on/off switch are nowhere explicitly addressed in the cited reference. Therefore, Cargin, Jr. neither suggests nor teaches that the main processor or the control processor operates the switch in response to a signal from the sleep mode circuit within the terminal to selectively power the probe. Without a suggestion or teaching that the switch is operated for this purpose in response to a power status signal, the Examiner's obviousness ground of rejection must fail.

As discussed above, Cargin, Jr. does not teach or suggest the selective coupling of a battery to a communication probe in response to a power status signal indicating a diagnostic tool is in an active mode. Arguably, the closest Cargin, Jr. comes to such a teaching is the use of the radio on/off switch to couple the radio module to the battery. The control of that switch is not disclosed as being responsive to any signal generated by the sleep mode circuitry or the watchdog circuit 96. Therefore, the Examiner has failed to demonstrate the motivation that one of ordinary skill in the art would have to modify Cargin, Jr. to make the on/off switch responsive to the sleep mode circuitry or the RS 485 watchdog. Consequently, claim 8 is patentable over the references of record. Claims 9-11 depend from claim 8 and are patentable for essentially the same reasons.

Claim 13 is an independent claim directed to a system having a diagnostic tool, a low intensity optical communication probe, a battery, and a switch that selectively couples the battery to the communication probe in response to the state of a power status signal generated by the diagnostic tool. For reasons similar to those discussed with reference to claim 8, the relationship of the switch to the signal generated by the diagnostic tool and to the battery is neither taught nor suggested by Cargin, Jr. Additionally, dependent claims 16 and 17 include the limitations of this relationship and they are likewise patentable over the references of record.

Claim 18 is an independent claim that is directed to a method for decoupling a battery from a low intensity optical communication probe in response to a power status signal generated by a diagnostic tool indicating the tool is in a sleep mode. Cargin, Jr. does not disclose the de-coupling of the battery from any terminal circuits in response to the sleep mode circuitry. Rather, Cargin, Jr. teaches the reduction of current supplied by the battery to the memory and real time clock circuit of the terminal. No evidence is given as to why one of ordinary skill in the art would consider it obvious to modify the current regulating circuit of Cargin, Jr. to decouple a battery from a communication probe. Likewise, Cargin, Jr. does not teach or suggest that the radio on/off switch responds to a power status signal for decoupling of the battery from the radio module. Consequently, the Examiner is applying the teachings of Applicants' specification to Cargin, Jr. Such methodology is inappropriate and this ground of rejection should be reversed. Claims 19-20 depend from claim 18 and are patentable for essentially the same reasons.

2. Second Ground of Rejection

CLAIMS 1-2 and 4-5

The Examiner has rejected claims 1 as being obvious in view of Cargin, Jr. This ground of rejection is unsupported as the Examiner has failed to set forth any basis for the motivation to modify the terminal of Cargin, Jr. to produce the battery pack set forth in that claim. The terminal of Cargin, Jr. includes a computer terminal and a battery

pack incorporated within the terminal. The battery pack serves as the single power source for the terminal and is located within a compartment in the bottom of the terminal.

Cargin, Jr., col. 5, lines 55-59 and col. 12, lines 8-65. Consequently, the battery pack of Cargin, Jr. does not require a cable for coupling data signals from the terminal to an external battery housing. Claim 1, however, does require a cable for coupling data signals from the diagnostic tool to the battery housing, which is external of the diagnostic tool.

The Board should also note that the on/off switch of Cargin, Jr. is not incorporated within a battery housing that is external to the terminal as Cargin, Jr. is silent as to the location of the switch. Nowhere does Cargin, Jr. teach or suggest that the on/off switch is coupled to the control processor with a cable for the transfer of data signals between them and for reception of the power status signal. As these limitations are expressly recited in claim 1, claim 1 is non-obvious in light of Cargin, Jr.

Claims 2 and 4-5 include the limitations of a battery housing that is external of the diagnostic tool and the incorporation of a switch that responds to a power status signal delivered through a cable for selectively coupling a battery in the housing to an optical communication probe. For at least the reasons stated above, these claims are also non-obvious in view of Cargin, Jr. and the Examiner's ground of rejection for these claims should also be reversed.

3. Third Ground of Rejection

CLAIMS 3 and 14-15

Claim 3 includes the limitations discussed above with respect to the first and second grounds of rejection and is non-obvious for at least the same reasons.

Additionally, claim 3 requires that the diagnostic tool have a watchdog timer for generating the power status signal that is provided to the switch in the battery pack. Cargin, Jr. neither teaches nor suggests such a watchdog timer. While Cargin, Jr. does describe sleep mode circuitry, the signal generated by that circuitry merely reduces

current at the base of a transistor that regulates current flow to the memory of the terminal. *Cargin, Jr., col. 13, line 54 to col. 14, line 14*. Thus, the sleep mode circuitry of Cargin, Jr. does not generate a power status signal that causes a switch within the battery housing to couple a battery in the housing to a communication probe. The other watchdog circuit disclosed in Cargin, Jr. is the RS 485 circuit 96 (FIG. 3). That circuit, however, is not described as being used to regulate the delivery of power and, consequently, it does not support the Examiner's ground of rejection for claim 3. In fact, the Examiner merely notes that it would have been obvious to use a watchdog timer to conserve power. The Examiner fails to indicate, though, what would motivate one of ordinary skill in the art to provide the signal from the watchdog timer through a cable to an external battery housing so a switch could selectively couple a battery in the housing to a communication probe. Thus, claim 3 is separately patentable over the references of record.

4. Fourth Ground of Rejection

CLAIMS 6 and 12

Claim 6 includes the limitations of claim 1 and is patentable over the references of record for at least the reasons noted above with respect to claim 1. Moreover, claim 6 requires a positive and negative interconnect that enables the battery in the battery pack to be directly coupled to the communication probe. The Examiner has failed to identify any portion of Cargin, Jr. that teaches or suggests such an interconnect in the battery pack. Because the Examiner has equated the optical communication probe of claims 1-6 with the radio of Cargin, Jr., he would need to show a positive and negative interconnect for directly coupling the battery to the radio. Cargin, Jr., however, discloses the use of a ribbon cable only for the purpose of coupling the radio module to the terminal. *See Cargin, Jr., col. 17, lines 20-28 and col. 19, lines 35-42*. As shown in FIG. 21 of Applicants' specification, a positive and negative interconnect includes conductors that mate with the battery housing to couple the battery directly to the communication probe. Again, the Examiner has not identified any motivation for one of ordinary skill in the art

to modify the battery pack of Cargin, Jr. with a positive and negative interconnect that enables direct coupling of the battery to the communication probe. Therefore, claim 6 is independently patentable over the references of record.

Claim 12 contains the limitations of claim 8 and is patentable for the reasons noted with respect to claim 8. Additionally, claim 12 requires that the battery be selectively coupled to the communication probe through a positive and negative interconnect. As already noted with respect to claim 6, Cargin, Jr. does not teach or suggest such a structure or its use to couple a battery to a communication probe selectively. Therefore, claim 12 is also independently patentable over the references of record.

CONCLUSION

As set forth above, the Examiner has failed to identify any motivation for one of ordinary skill in the art to modify the battery pack of Cargin, Jr. to include a switch that responds to a power status signal from a diagnostic tool to couple or decouple a battery selectively from an optical communication probe. Additionally, no teaching or suggestion has been provided to separate the battery pack of Cargin, Jr. from the terminal of that reference nor has the Examiner demonstrated that one of ordinary skill in the art would modify the sleep mode circuitry of Cargin, Jr. to provide a power status signal to a switch for selectively coupling a battery to a communication probe. Finally, the Examiner ignored the positive and negative interconnect of claims 6 and 12 and failed to provide any basis for concluding that these structures are obvious in light of the ribbon cable coupling the radio module to the terminal disclosed in Cargin, Jr. The Board of Appeals, therefore, is respectfully requested to reverse the rejection of all pending claims 1-6 and 8-20.

Respectfully submitted,



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(8) CLAIMS APPENDIX

Claim 1: A battery pack for powering a communication probe used for optical communication between an external device and a diagnostic tool comprising:

- a battery housing having at least one battery for powering an optical communication probe;
- a cable for coupling data signals between the battery housing and a diagnostic tool that is external to the battery housing; and
- a switch within the housing for selectively coupling the battery to the optical communication probe to deliver electrical power from the battery to the communication probe, the switch being coupled to power leads of the battery and also being coupled to a power status signal provided to the switch through the cable coupling the battery pack and the external diagnostic tool, the power status signal indicating whether the diagnostic tool is in an active or sleep mode, the switch selectively couples the battery to the optical communication probe to deliver electrical power from the battery to the communication probe in response to the power status signal from the diagnostic tool indicating the diagnostic tool is in an active mode.

Claim 2: The battery pack of claim 1 further comprising:

- a battery charger circuit coupled to the battery, the battery charger circuit being adapted to couple to an AC power source so the battery charger may be used to re-charge the battery when the battery charger circuit is coupled to the AC power source.

Claim 3: The battery pack of claim 1, wherein the power status signal is generated by a watchdog timer associated with the diagnostic tool in response to expiration of the watchdog timer.

Claim 4: The battery pack of claim 1, wherein the battery is a lithium battery.

Claim 5: The battery pack of claim 1, wherein the battery is a disposable battery.

Claim 6: The battery pack of claim 5 further comprising:

 a positive and negative interconnect for directly coupling the battery to the communication probe; and
 the switch selectively couples the battery to the positive and negative interconnect in response to the power status signal being active.

Claim 7 (canceled).

Claim 8: A method for conserving power in a battery that powers a communication probe used for optical communication between an external device and a diagnostic tool comprising:

 receiving a power status signal from a diagnostic tool, the power status signal indicating whether the diagnostic tool is in an active or a sleep mode; and

selectively coupling a battery to an optical communication probe to power the communication probe for bi-directional optical communication with a device that is external of the communication probe in response to the power status signal from the diagnostic tool indicating the diagnostic tool is in an active mode.

Claim 9: The method of claim 8 further comprising:

re-charging the battery from an external AC power source.

Claim 10: The method of claim 8 further comprising:

generating the power status signal that indicates the diagnostic tool is in an active mode in response to user activity at the diagnostic tool.

Claim 11: The method of claim 8, wherein the battery is selectively coupled to the communication probe through a cable.

Claim 12: The method of claim 8, wherein the battery is selectively coupled to the communication probe through a positive and negative interconnect.

Claim 13: A diagnostic system for an appliance comprising:

a diagnostic tool that generates a power status signal indicating whether the diagnostic tool is in an active mode or a sleep mode;

a low intensity optical communication probe for bi-directional optical communication with an external device;

a battery for powering the low intensity optical communication probe;
a switch for selectively coupling the battery to the low intensity optical communication probe to provide power from the battery to the communication probe, the switch selectively coupling the battery to the communication probe in response to the power status signal generated from the diagnostic tool indicating the diagnostic tool is in the active mode.

Claim 14: The system of claim 13 further comprising:

a watchdog timer associated with the diagnostic tool for generating the power status signal.

Claim 15: The system of claim 14 wherein the watchdog timer generates an active mode signal for the power status signal in response to user activity at the diagnostic tool.

Claim 16: The system of claim 13 further comprising:

a re-charging circuit for converting AC power to a form for re-charging the battery.

Claim 17: The system of claim 13 further comprising:

a housing in which the battery and switch are mounted, the housing being directly coupled to the diagnostic tool.

Claim 18: A method for enabling optical communication between a diagnostic tool and a communication probe comprising:

powering a low intensity optical communication probe with a battery for bi-directional optical communication with a device that is external of the optical communication probe; and

selectively de-coupling the battery from the low intensity optical communication probe in response to a power status signal generated by a diagnostic tool indicating the diagnostic tool is in sleep mode.

Claim 19: The method of claim 18 further comprising:

generating the power status signal in response to user activity at the diagnostic tool.

Claim 20: The method of claim 18 further comprising:

converting AC power to a form for re-charging the battery; and applying the converted AC power to the battery to re-charge the battery.

(9) EVIDENCE APPENDIX

No evidence was submitted under rules 1.130, 1.131, or 1.132. Additionally, no other evidence has been entered in the record by the Examiner upon which the Applicants rely.

(10) RELATED PROCEEDINGS APPENDIX

No proceedings were identified in the Related Appeals and Interferences presented above. Therefore, no decisions of a court or the Board are contained herein.